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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
HUNNICUTT, RACHEL KAPUST	
ART UNIT	**PAPER NUMBER**
1647	

DATE MAILED: 03/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/045,534	PILON, APRILE L.	
	Examiner	Art Unit	
	Rachel K. Hunnicutt	1647	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) *16-33 and 37-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15 and 34-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 May 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of Group I (encompassing claims 1-15 and 34-36), mailed on December 1, 2004, is acknowledged. The traversal is on the ground(s) that there is not a substantial burden on the Examiner because a search of Group I should encompass the search of the subject matter of Groups II-V.

Applicant's arguments have been fully considered but have not been found to be persuasive. The different groups of methods require different, non-contiguous searches as evidenced by their different classification. They require separate searches, and the searches require considerations as to the methodologies themselves, and to consider all of these groups would constitute an undue burden because each search requires considerations that are separate from each of the others.

The restriction requirement is still deemed proper and is therefore made FINAL. Claims 16-33 and 37-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention. Claims 1-15 and 34-36 are under consideration.

Priority

Applicant's claim for priority under 35 U.S.C. 120 to U.S. Patent Applications 09/835,784, 09/549,926, 09/120,264, 09/087,210, and 08/864,357 is acknowledged. However, the applications upon which priority is claimed fail to provide adequate written support under 35 U.S.C. 112 for the claims of this application. The applications do not provide support for methods for identifying compounds that bind to fibronectin type III (fnIII) polypeptides or methods for identifying compounds that compete for binding with uteroglobin. Thus, the priority date of the claimed invention is October 24, 2001, which is the filing date of the current application.

Specification

The use of the trademark ZIPLOC™ (p. 35), EPPENDORF™ (p. 50), MATRIGEL™ (p. 74), Q-TIPS™ (p. 74), XCELL™ (p. 77), BIOMAX™ (p. 77), and RAINBOW™ (p. 77) have been noted in this application. They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

The disclosure is objected to because of the following informalities: There are amino acid sequences on p. 76 and 77 of the specification. They are not identified by sequence identifiers, and they are not listed in a separate sequence listing. Applicants are directed to MPEP 2422 and 37 C.F.R. 1.821.

In order to comply with 37 C.F.R. 1.821, appropriate correction is required. Applicants must amend the specification to add the appropriate sequence identifiers, and Applicants are required to submit a separate sequence listing.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 and 34-36 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: determining whether a compound inhibits a fibronectin-mediated process. The preambles of the claims are drawn to methods of identifying compounds that inhibit a fibronectin-mediated process. The claims have steps of determining

whether a compound binds a fnIII polypeptide, but the claims do not have a step of determining whether a compound inhibits a fibronectin-mediated process.

Claims 1-7, 9-14, and 34-36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are drawn to a method for identifying a compound capable of inhibiting a fibronectin-mediated process. One skilled in the art would not know what processes were encompassed by the claims. "Fibronectin-mediated process" is not defined by the specification. The specification teaches that fnIII domains are involved in fibronectin-dependent cell adhesion, polymerization, deposition, and fibronectin-fibronectin interactions (see p. 9), but the specification does not teach other fibronectin-mediated processes.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-15 and 34-36 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for determining whether a compound binds fibronectin or superfibronectin and determining whether the compound inhibits cell adhesion, does not reasonably provide enablement for methods of identifying compounds capable of inhibiting processes involving all fibronectin Type III polypeptides. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is undue include, but are not limited to: 1) nature of the invention; 2) state of the prior art; 3) relative skill of those in the art; 4) level of predictability in the art; 5) existence of working examples; 6) breadth of claims; 7) amount of direction or guidance by the inventor; and 8) quantity of experimentation needed to make and/or use the invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

The claims are drawn to methods of identifying compounds that are capable of inhibiting fibronectin-mediated processes comprising determining whether a compound binds a fibronectin Type III polypeptide. The specification defines a "fibronectin Type III polypeptide" as a polypeptide that includes a fnIII domain (p. 21). However, the art teaches that fnIII domains have no common function, and they occur in proteins that perform a number of different roles in the cell (Steward *et al.* (2002), *J. Mol. Biol.* 318: 935-940). The domains are found in extracellular matrix proteins, cell-adhesion molecules, enzymes, and in muscle proteins. Not all of the polypeptides encompassed by the claims are involved in fibronectin-mediated processes such as fibronectin-mediated cell adhesion. Moreover, one skilled in the art would not know what the function of a polypeptide is simply by identifying it as having a fnIII domain. Thus, the specification is enabled for determining whether a compound binds fibronectin or superfibronectin, but not any polypeptide comprising a fnIII domain.

Claims 5 and 34-35 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for determining whether a compound competitively binds fibronectin or superfibronectin in the presence of uteroglobin, does not reasonably provide enablement for methods of determining whether a compound competitively binds fibronectin or superfibronectin in the presence of any other 4-helix bundle polypeptide. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The claims are drawn to methods of identifying compounds that are capable of inhibiting fibronectin-mediated processes comprising determining whether a compound competitively binds a fibronectin Type III polypeptide in the presence of a 4-helix bundle polypeptide. The specification does not define "4-helix bundle polypeptides". The specification teaches that uteroglobin is a 4-helix bundle polypeptide, but the specification fails to teach other 4-helix bundle polypeptides. Ricci *et al.* teach that there is a 4-helical bundle family of cytokines (2004, *Curr. Pharm. Des.* 10(31): 3901-3911). Such cytokines are not known to associate with fibronectin, yet they would be encompassed by the claims. One skilled in the art would not know how to use any 4-helix bundle polypeptide other than uteroglobin in a competitive binding assay.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Sipes *et al.* (1993, *J. Cell Biol.* 121(2): 469-477). Claims 1-8 are drawn to a method of identifying compounds capable of inhibiting a fibronectin-mediated process such as cell adhesion, comprising determining whether a compound binds a fnIII polypeptide. The method may comprise determining if the compound binds in a competitive binding assay.

Sipes *et al.* teach direct binding assays and competitive binding assays that identify peptides that bind to fibronectin (p. 470). Sipes *et al.* also teach that the peptides can inhibit fibronectin binging to gelatin and fibronectin-mediated cell adhesion to a gelatin or collagen matrix (p. 470). Although Sipes *et al.* are silent as to whether or not the peptide identified would interfere with uteroglobin binding, it would be an inherent feature of the peptide because it interferes with fibronectin-mediated cell adhesion. The claiming of an unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,491,130. Claims 1-8 are as stated above. The '130 patent teaches direct binding and competitive binding assays wherein peptides were screened for their ability to bind fibronectin and inhibit fibronectin-mediated cell adhesion (see column 8, Example 1 through Column 9,

Example 3). Although the '130 patent is silent as to whether or not the peptides identified would interfere with uteroglobin binding, it would be an inherent feature of the peptides because they interfere with fibronectin-mediated cell adhesion. The claiming of an unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,817,750. Claims 1-8 are as stated above. The '750 patent teaches a method to isolate peptides that interact with the RGD-containing 10^{th} fnIII domain of fibronectin (column 11, Example 1). The '750 patent also teach the use of an excess of phage to introduce binding competition (see columns 12 and 13). The '750 patent further teaches assays for peptide inhibition of the cell attachment function of integrins, and it shows that the CWDDGWLC peptide inhibited cell adhesion when either fibronectin or vitronectin were used as substrates (column 14, Example III). Although the '750 patent is silent as to whether or not the peptide identified would interfere with uteroglobin binding, it would be an inherent feature of the peptide because it interferes with mediated-mediated cell adhesion. The claiming of an unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

Claims 1 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Shimizu *et al.* (1997, *Biol. Pharm. Bull.* 20(12): 1219-1223). Shimuzu *et al.* teach a standardized assay system of fibronectin activity using fibronectin-mediated cell adhesion. The cell binding to fibronectin was measured after several peptides were incubated with fibronectin (p. 1221). Thus, claims 1 and 7 are anticipated by Shimuzu *et al.*

Conclusion

NO CLAIMS ARE ALLOWED.

The following articles, patents, and/or published patent applications found by the Examiner during the art search, while not relied upon, are considered pertinent to the instant application:

U.S. Patent No. 6,066,724

U.S. Patent Application Publication No. 2002/0025510

International Patent Application WO 99/52493

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rachel K. Hunnicutt whose telephone number is (571) 272-0886. The examiner can normally be reached on Mon-Fri 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brenda Brumback can be reached on (571) 272-0961. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RKH
3/7/05

JANET ANDRES
PRIMARY EXAMINER